

Module F:

Infant Nutrition

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Overview

Introduction

This module provides information about the nutrition and health status of infants.

Learning Objectives

After completing this module the Nutrition Assistant will be able to:

- describe normal growth* and development of infants,
 - list factors that influence growth and development of infants,
 - identify that breastfeeding is the foundation of good infant feeding practices,
 - describe expected feeding skills for given ages,
 - recognize appropriate and inappropriate feeding practices,
 - describe common infant feeding problems and identify solutions to these problems,
 - describe guidelines for formula preparation,
 - list key recommendations for infant health care and safety,
 - identify indicators of nutritional need and specify conditions for an infant's WIC eligibility,
 - in a case study situation, assess an infant's growth pattern, biochemical, clinical and dietary status, and
 - in a role-play situation, interview the caregiver of an infant, assess the infant's nutritional status, prioritize needs and provide individual education.
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* Words that you may not know are **underlined**. Definitions for these words can be found in the **Glossary** at the end of the module. (Note: Words are only underlined the first few times they appear in the text.)

Growth & Development

Growth

Growth is an increase in the physical size of the body.

Development

Development is the process of learning new skills or maturing.

Stages

Infants go through several stages of development as they grow. These stages involve physical, mental, and social changes.

Chart

The chart on the next pages lists and describes this development for the infant's first 12 months.

Every baby is different. Some babies develop slower and others faster than what the chart shows.

**Learning
Activity 1**

To learn more about the stages of infancy you may want to try **Learning Activity 1** found at the end of this module.

Growth & Development (continued)

Stages of Infancy

Age	Description
1 month	<ul style="list-style-type: none">• Locates mother's breast, latches onto the nipple, and sucks to nurse and/or sucks from a bottle• Begins to trust parent/caregiver• Responds to voices
2 months	<ul style="list-style-type: none">• Lifts head slightly• Gurgles, coos, and squeals• Cries to communicate
3 months	<ul style="list-style-type: none">• Holds head up to look• Rolls from back position to side• Begins to laugh
4 months	<ul style="list-style-type: none">• Lifts head up• Rolls from front position to side• Sits with support• Reaches for objects• Eats soft solid foods from a spoon
5 months	<ul style="list-style-type: none">• Turns head freely• Rolls over from front position to back• Wiggles on floor• Reaches for and grasps objects• Babbles and tries to mimic sounds• Turns head toward speaker

Growth & Development (continued)

Stages of Infancy (continued)

Age	Description
6 –9 months	<ul style="list-style-type: none">• Rolls over both ways• Sits unsupported• Begins to crawl• Stands if supported by furniture or person• Uses palm of hand to pick up objects• Drinks from a cup• Gets first teeth• Begins to feed self• Experiments with sounds• Responds to name
9-12 months	<ul style="list-style-type: none">• Crawls• Climbs on furniture• Walks with help• Uses fingers and thumb to pick up objects• Explores by touching• Feeds self• Begins to use spoon• Begins to understand phrases• Says simple words• Understands “no”

Growth & Development (continued)

Factors that Influence Growth & Development

An infant's growth and development are affected by:

- genetics,
- environment,
- behavior, and
- disease.

The chart on the next page describes how these factors affect growth and development.

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Growth & Development (continued)

Factors that Influence Growth & Development

Genetics (Inherited Characteristics)

An infant's genes directly influence her/his:

- body type
- height
- some health conditions and diseases

For example, an infant of short stature may be short since her/his parents are short.

Environment (the “Outside World”)

Environmental factors include:

- nutrition
- housing and sanitation
- health care
- care given by parent(s) or caregiver(s)

If these are not adequate, the infant may not grow normally.

For example, a breastfed infant usually develops into a healthy toddler. However, an infant that is fed formula made from water containing lead may have some develop-mental problems.

Behavior

Behaviors of the pregnant woman can affect the infant's growth and development.

For example, heavy smoking and drug use can reduce fetal growth and the infant's birth weight.

Disease

Diseases may affect growth and development.

For example, persistent asthma may affect the nutritional status of the infant.

Feeding the Infant

Infant Feeding

Infant feeding is an extremely important part of an infant's growth and development. Due to rapid growth, an infant needs more calories and nutrients for her/his size than at any other time in her/his life.

Breastfeeding the Foundation of Good Feeding Practices

The American Academy of Pediatrics (AAP) considers breastfeeding the foundation of good feeding practices. Breast milk is the intended food for a baby. For this reason, and many others, WIC promotes and supports breastfeeding.

Reflexes Affect Feeding

Early feeding skills are greatly affected by an infant's reflexes.

A reflex is an automatic response, usually a movement that occurs when a part of the body is touched or stimulated.

Parents and caregivers should be aware of the infant's natural reflexes and use these to guide feeding practices.

5 Reflexes

There are several reflexes that affect movement of the infant's mouth and affect feeding. These are:

- rooting reflex,
 - tongue thrust reflex,
 - suck-swallow pattern,
 - gag reflex, and
 - bite reflex.
-

Chart of Reflexes

The chart on the next page describes the 5 reflexes in more detail.

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Feeding the Infant (continued)

Descriptions of Infant Reflexes

Rooting Reflex is the movement that occurs when the infant is touched on the cheek, lips, or side of the mouth. The infant moves her/his head in the direction of the touch and opens her/his mouth. (Rooting may also occur when the mother's nipple is directly in front of the infant's mouth.)

- Occurs in infant from birth to 3 months
- Helps infant nurse by allowing her/him to seek out and grasp a nipple
- Makes it difficult to feed the infant from a spoon or cup
- Is NOT present for about 2 hours after eating or when the infant is urinating.

Tongue Thrust Reflex is the movement in which the tongue pushes forward when the lips are touched.

- Occurs in infant from birth to 4 months
- Helps infant nurse
- Makes it difficult to feed the infant from a spoon or cup

Suck-Swallow Pattern is the movement that occurs when the tongue and lower lip are touched.

- Occurs in infant from first few days of life to several months
- Allows the infant to swallow and breathe at the same time
- Gives infant a strong forceful suck when nursing
- Makes it difficult to feed the infant from a spoon or cup

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Feeding the Infant (continued)

Descriptions of Infant Reflexes (continued)

Gag Reflex is the movement that occurs when the back half of the tongue or back of the roof of the mouth is touched.

- Occurs from birth to death
- Weakens in infant at 6 months
- Protects the infant from choking
- Makes it difficult for the young infant to feed from a spoon or to eat foods that have a lot of texture

Bite Reflex is the up-and-down biting movement that occurs when the infant's gums are touched.

- Occurs in infant from birth to 6 months
- Helps with nursing
- Makes it difficult for the infant to feed from a spoon
- Makes it difficult for the infant to drink from a cup

Feeding the Infant (continued)

Infant Feeding Skills

Infant feeding skills vary from baby to baby. A baby may develop a skill before or after the suggested age.

Feeding Charts

The 3 charts that follow on the next pages list:

- the suggested age(s) at which feeding skills develop,
- age(s) at which certain foods may be introduced into the infant's diet, and
- appropriate and inappropriate feeding practices.

Use these charts as guidelines for parents and caregivers.

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Feeding the Infant (continued)

Expected Feeding Skills for Given Ages

Feeding Stage			Age	Feeding Skills: <i>Infant can...</i>
Milk Feeding (0-6 months)			Birth – 4 months	<ul style="list-style-type: none"> • Locate mother's breast • Latch onto nipple • Suck and swallow liquid • Push tongue out to help the flow of liquids from breast or bottle
			4 – 6 months	<ul style="list-style-type: none"> • Sit with support • Hold head steady • Keep food in mouth and swallow it
	Transition to Solid Foods (4-12 months)		5 - 7 months	<ul style="list-style-type: none"> • Sit without support • Begin to chew
			6 months	<ul style="list-style-type: none"> • Use a cup with help
			7 – 8 months	<ul style="list-style-type: none"> • Grasp and hold things
		Table Foods & Self-Feeding (8-12 months)	8 –10 months	<ul style="list-style-type: none"> • Take a bite of food • Pick up finger foods • Use a cup
			10 – 12 months	<ul style="list-style-type: none"> • Chew and swallow soft, mashed, chopped foods • Use a cup • Start to use a spoon
			1 year	<ul style="list-style-type: none"> • Chew and swallow soft table foods • Use a spoon

Feeding the Infant (continued)

Introduction of Foods by Age

Age	Food
Birth – 4 months	<ul style="list-style-type: none"> Breastmilk is preferred If not breastfed, infant formula with iron
4 - 6 months	<ul style="list-style-type: none"> Solid foods such as cereal (First plain rice baby cereal, then oatmeal or barley baby cereal)
5 - 7 months	<ul style="list-style-type: none"> Water from a small cup Smooth, strained, or pureed cooked vegetables and fruits (begin with vegetables first) Do not add salt or sugar!
7 months	<ul style="list-style-type: none"> Fruit juice Limit juice to 2 ounces (1/4 cup) per day Mix 2 ounces of juice with 2 ounces of water Always give juice in a cup No orange or pineapple juice yet!
7 - 8 months	<ul style="list-style-type: none"> Strained or pureed chicken, beans or meat -No hot dogs! Cottage cheese Plain yogurt Cooked egg yolk mashed with breast milk, formula, or yogurt -No egg whites! Mashed tofu <p>Offer a variety of foods. Let baby begin to feed self.</p>

Feeding the Infant (continued)

Introduction of Foods by Age (continued)

Age	Food
8 - 10 months	<ul style="list-style-type: none">• Mixed grain baby cereal• Fruits and cooked vegetables, mashed with a fork• Cooked plain rice and noodles, mashed or chopped• Finger foods such as:<ul style="list-style-type: none">➤ small pieces of mild cheese➤ small pieces of soft, cooked vegetables➤ small pieces of soft peeled fruit➤ small pieces of cooked, ground meat, chicken or fish (take out all bones and tough parts)➤ toasted bread squares, unsalted crackers or small pieces of soft tortilla➤ small pieces of tofu <p>Do not add salt, sugar, fat or spices to baby's food.</p> <p>Let baby feed self.</p> <p>Keep giving the baby new fruits and vegetables, so s/he will like different foods.</p> <p>As the baby eats more solid food, he or she will drink less breast milk or formula.</p>

Feeding the Infant (continued)

Introduction of Foods by Age (continued)

Age	Food
10 – 12 months	<ul style="list-style-type: none">• Small pieces of cooked or soft foods the family eats• Cereals, bread and crackers• Fruits and cooked vegetables• Cooked egg yolks, soft meats, beans and lentils• Pasta (such as noodles) and rice <p>Let baby feed self with a spoon or hands. Let baby sit at the table with the family. If using a bottle use it less and a cup more. Give the baby a small cup of breast milk, formula or water to drink with the meal.</p> <p>Wean the baby from the bottle little by little around 12 months.</p>
1 year	<ul style="list-style-type: none">• Whole cows milk a little at a time. When the baby gets used to whole cow's milk, offer 4 ounces in a cup, 4 times a day until age 2. (Babies fed non-fat milk before age 2 may drink more milk to get enough calories. This may lead to lifelong habits of overeating.)• Cooked whole egg <p>Offer the baby 3 small meals a day plus nutritious snacks.</p> <p>Serve the baby liquids from a cup only (to wean baby from bottle).</p>

Feeding the Infant (continued)

Appropriate & Inappropriate Feeding

Appropriate	Inappropriate
Always hold the baby when feeding.	Leaving the baby alone with a bottle or propped up with a bottle.
Give the baby only breast milk or iron-fortified formula till s/he is about 4-6 months of age.	<p>During the first year giving the baby:</p> <ul style="list-style-type: none"> • cow's milk • goat's milk • raw milk • evaporated • sweetened condensed milk <p>(This may cause allergies, intestinal irritation, bleeding, or anemia.)</p>
Use bottles only for formula, breast milk or water.	Using bottles for cereals and pureed foods. (This does not improve baby's sleep and may delay learning feeding skills, cause digestive problems and choking.)
Give the baby a bottle at feeding times only.	Putting the baby to bed or to nap with a bottle.
If necessary, only allow the child to fall asleep with a bottle containing pure water.	Allowing baby to fall asleep with a bottle containing cereal, fruit drinks, soda or sugar water.

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Feeding the Infant (continued)

Appropriate & Inappropriate Feeding (continued)

Appropriate	Inappropriate
<p>Introduce solid foods, such as cereals, at about 4-6 months when the baby:</p> <ul style="list-style-type: none"> • can sit with support • has good head, neck, and tongue control • can keep food in mouth • can show when s/he is full • can show likes and dislikes 	<p>Allowing the baby to eat solid foods before 4 months of age.</p> <p>Babies cannot digest carbohydrates until about 4 months of age. (Early feeding of solids may cause allergies, choking, diarrhea, constipation; reduce breast milk or formula intake; and/or stress the baby's kidneys.)</p>
<p>Introduce solids that are mashed or of a consistency easily eaten.</p>	<p>Giving any solid foods that are hard or in big chunks, such as nuts, whole grapes, hot dogs. These could cause choking.</p>
<p>Feed the baby until s/he is full and/or has had enough to eat. The baby will show this by:</p> <ul style="list-style-type: none"> • stopping eating • turning her/his head • pressing her/his lips together • crying when food is offered • spitting food out 	<p>Do NOT force a baby to eat when s/he is full or has had enough. This may lead to obesity.</p>
<p>Begin teaching the baby to drink from a cup at about 6 months of age.</p>	<p>Not teaching the baby to drink from a cup until s/he is about 1 year old.</p>

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Feeding the Infant (continued)

Appropriate & Inappropriate Feeding (continued)

Appropriate	Inappropriate
Offer fruit juice in a cup only.	Offering fruit drinks, soda and sugar water in bottles and cups.
Replace bottle feedings with cup feedings at about 9 to 10 months.	Not offering a cup to get the baby ready for weaning.

Infant Feeding Problems

Infant Feeding Problems

There are several common infant feeding problems. Be familiar with them so that you can assist parents/caregivers in identifying solutions.

Chart of Feeding Problems & Solutions

The chart on the next page lists some common infant feeding problems and possible solutions.

Infant Feeding Problems (continued)

Common Infant Feeding Problems & Solutions

Problem	Solution(s)
<p>Allergies (sensitivities to certain substances) may result in:</p> <ul style="list-style-type: none"> • rash • breathing problems • diarrhea • sometimes death 	<ul style="list-style-type: none"> • Breastfeed. • Use iron-fortified formula if not breastfeeding. • Delay solids until at least 4th month. • Introduce 1 food at a time (every 3-5 days) in small amounts. • Avoid allergenic foods (such as egg whites and peanuts, peanut butter)
<p>Baby Bottle Tooth Decay may result in:</p> <ul style="list-style-type: none"> • pain • inflamed gums • poor food intake 	<ul style="list-style-type: none"> • Clean baby's gums and/or teeth daily. (Do NOT use toothpaste until child is about 3 years old.) • Start baby on cup between 6-7 months of age. • If needed, put water in bottle at bedtime. • Do NOT: <ul style="list-style-type: none"> ➤ allow baby to suck on a bottle continuously during the day, ➤ put baby to bed or nap with a bottle, ➤ have baby suck a pacifier dipped in sugar, honey or syrup, or ➤ give sweetened drinks.

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Infant Feeding Problems (continued)

Common Infant Feeding Problems & Solutions (continued)

Problem	Solution(s)
Choking	<ul style="list-style-type: none">• Cut hot dogs and meat sticks into 4 long strips.• Cut round foods such as grapes and cherries in half and remove seeds.• Remove bones from meats.• Cook hard fruits and vegetables.• Have baby sit while eating.• ALWAYS watch baby while s/he eats.• Do NOT:<ul style="list-style-type: none">➤ give hard foods such as raw carrots, nuts, popcorn and hard candy➤ give sticky foods such as peanut butter or soft bread➤ give foods such as marshmallows (they can swell in the throat)➤ feed cereal in a bottle

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Infant Feeding Problems (continued)

Common Infant Feeding Problems & Solutions (continued)

Problem	Solution(s)
<p>Colic (extreme discomfort in the digestive tract)</p>	<div data-bbox="764 527 1393 621" style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p><i>Take baby to doctor to make sure baby does not have another problem.</i></p> </div> <ul style="list-style-type: none"> • If formula feeding, make sure formula is prepared correctly. • Keep a normal feeding schedule. • Flex the baby's knees to chest to stimulate digestion. • Comfort baby.
<p>Constipation (difficult bowel movements due to hard stools) may be due to:</p> <ul style="list-style-type: none"> • incorrect formula preparation • overfeeding • early introduction of solids • low intake of water • lack of movement/activity 	<ul style="list-style-type: none"> • Breastfeed on demand. • If formula feeding, <ul style="list-style-type: none"> ➤ follow formula preparation instructions, ➤ offer appropriate amount of formula, ➤ do NOT overfeed, and ➤ do NOT switch to low-iron formula. • Cut back on solids if baby is under 6 months old. • Give water (2-4 fluid ounces between feedings) or diluted prune juice. • Allow baby to be active (such as crawling).

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Infant Feeding Problems (continued)

Common Infant Feeding Problems & Solutions (continued)

Problem	Solution(s)
<p>Diarrhea (large volume and more frequent than usual loose or watery stools) may be due to:</p> <ul style="list-style-type: none"> • infection • rapid or overfeeding of formula • not enough water in formula • early introduction of solids • excess sugar in diet • allergy • fatigue • antibiotics 	<div data-bbox="667 533 1300 632" style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p><i>See doctor or Registered Dietitian immediately.</i></p> </div> <ul style="list-style-type: none"> • Continue to feed baby. • Give plenty of water.
<p>Overfeeding</p>	<ul style="list-style-type: none"> • Feed baby only when s/he is hungry. • When baby cries first check to see what is bothering her/him. Do NOT automatically feed the baby. • Do not force baby to finish all the milk in a bottle or food in a dish. • Do not use food to reward, bribe, or comfort the baby. • Allow baby to be active (such as crawling).

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Infant Feeding Problems (continued)

Common Infant Feeding Problems & Solutions (continued)

<p>Poor Intake may result in:</p> <ul style="list-style-type: none"> • low weight • poor growth • infection 	<div data-bbox="764 464 1393 520" style="border: 1px solid black; padding: 5px; text-align: center;"> <p><i>See doctor or Registered Dietitian.</i></p> </div> <ul style="list-style-type: none"> • Follow infant feeding recommendations.
<p>Spitting Up may be due to:</p> <ul style="list-style-type: none"> • too much food in stomach • too much air in stomach • bottle nipples with enlarged holes • improper positioning of baby 	<ul style="list-style-type: none"> • Stop feeding when baby seems full. • Use bottle nipples that are in good condition. • Hold baby at a 30° angle when feeding. • Burp baby every few minutes when breastfeeding or every couple of ounces when formula feeding. • Do not move baby a lot during or after a feeding.

Formula Feeding

Breastfeed Whenever Possible

Babies should be breastfed whenever possible.
(The American Academy of Pediatrics (AAP) considers breastfeeding the foundation of good feeding practices.)

See *Module C: Breastfeeding Promotion & Support*.

Formula

If the baby is not breastfed, s/he should be given commercially prepared iron-fortified infant formula.

Infant formula is a specially made mixture of nutrients, usually in a powder or liquid form, given to infants when breastfeeding is not possible.

Types of Formula

There are 3 types of infant formula. These are described in the chart below.

Type	Description
Milk-based	Made from cow's milk
Soy-based	Made from soybean protein
Special Therapeutic	Made to be easily digested Made for infants with medical conditions such as digestive problems

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Formula Feeding (continued)

Importance of Correct Formula Preparation

Infant formula should always be correctly prepared.

If the formula is too diluted (too much water added), the baby may not get the nutrients and/or calories s/he needs. If the formula is too concentrated (not enough water added), the baby's kidneys may be damaged and/or the baby may become dehydrated.

Formula Storage

Infant formula should also be stored properly. Proper storage prevents the growth of germs and possible infection of the baby.

How to Prepare and Store Formula

The guidelines on the next pages describe how to prepare and store formula.

continued on next page

Formula Feeding (continued)

Formula Preparation

When preparing formula use a **sterile** bottle, nipple and scoop.

Ready-to-Feed Formula:

- Clean top of the can and can opener.
- Shake the can well.
- Open the can and pour the amount of formula needed into a clean bottle.
- Do **NOT** add water.

Concentrated Formula:

- Clean top of the can and can opener.
- Shake the can well.
- Open the can and pour the contents into a clean plastic or glass container.
- Refill the formula can with water, pour it into the container with the formula and stir well. (1 can of water to 1 can of formula is the correct ratio.)

Powdered Formula:

- Use scoop that comes with can
- Mix 1 scoop powder with 2 fluid ounces of cold water
- Shake well to remove lumps.
- Prepare only 1 bottle at a time and use it immediately.

Warming Up Formula: If the baby likes warmed milk, swirl the bottle in a pan or bowl of warm water.

- Do NOT warm milk in a microwave. (Microwaves do not heat evenly. Babies' mouths and throats have been burned by "hot spots" inside a bottle when the outside of the bottle felt cool.)
- Do NOT warm milk by putting the bottle under HOT running tap water.

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Formula Feeding (continued)

Formula Storage

When storing formula:

- Store prepared formula in a clean, covered container in the refrigerator.
- Store formula in refrigerator for only 48 hours or less.
- After formula has been warmed and the infant fed, throw out any formula remaining in the bottle.
- Do NOT carry bottles of formula around all day unless they are properly cooled.
- Do NOT allow the older infant to carry a bottle of formula around throughout the day.

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Formula Feeding (continued)

Bottle Feeding

Formula is usually given to the infant in a bottle. Bottle feeding should imitate breastfeeding as much as possible. When the baby is bottle fed, s/he should:

- be cradled and the bottle held so that the nipple is constantly filled with formula, not air;
 - be allowed to decide when s/he has eaten enough;
 - NOT be forced to finish a bottle;
 - NOT be put to bed or to nap with a bottle; and/or
 - NOT have the bottle propped up so the baby feeds her/himself.
-

Feeding Frequency & Amounts

The frequency and amount of formula a newborn infant will take will vary with each baby. As the baby grows older, the amount per feeding will increase and the number of feedings will decrease.

The chart below shows what a parent or caretaker **may** expect for a **newborn** infant. Larger infants may need more formula.

Frequency	<ul style="list-style-type: none">• 4 fluid ounces/4 hours OR• 3 fluid ounces/3 hours
Number of Feedings	5 to 8 feedings/24 hours
Amount	<ul style="list-style-type: none">• 24 fluid ounces/24 hours

Weaning from the Bottle

Definition

Weaning is the process of reducing and finally discontinuing bottle feeding by replacing bottle feeding of formula or milk with a cup and other types of eating and sources of food.

Recommendation

A child should be totally weaned from a bottle by **18 months of age**.

How to Wean

When weaning a baby from the bottle a parent or caregiver may want to follow the suggestions listed on the next page.

Be patient! Weaning an infant from the bottle usually takes time.

Learning Activity 2

To learn more about infant nutrition issues, including weaning, you may want to try **Learning Activity 2** found at the end of this module.

continued on next page

Weaning from the Bottle (continued)

Steps to Take When Weaning

Step	Description
1	Replace the feeding that the infant is least interested in.
2	After several days or weeks, replace another feeding.
3	Repeat until all bottle feedings have been eliminated.
4	<p>To eliminate the bottle feeding at nap or bedtime (this is usually the most difficult one to stop), try:</p> <ul style="list-style-type: none">• interesting the baby in something other than the bottle such as a stuffed toy or blanket• giving a lot of attention and affection• offering a small snack or beverage from a cup before bedtime• giving a bottle with a small amount of water before bedtime if needed

Infant Health Care & Safety

Infant Health Care & Safety

All parents and caregivers want their infants to be healthy and safe.

The chart on the following pages describes some key recommendations for infant health care and safety.

Infant Health Care & Safety (continued)

Recommendations for Infant Health Care & Safety

Cleanliness/Sanitation:

- Wash hands with hot water and soap before preparing stored breast milk or formula.
- Sterilize bottles by washing them in an automatic dishwasher or boiling water.
- Store clean bottles upside down or covered in a clean place.

Health:

- Breastfeed the baby whenever possible.
- Feed non-breastfed baby commercially prepared iron-fortified formula.
- To help prevent Sudden Infant Death Syndrome (SIDS), put the baby on her/his **back** when putting her/him to bed or a nap.
- Give solid foods only when the baby is ready (usually at 4-6 months).
- Begin teaching the baby how to use a cup at 6-7 months.
- Immunize the baby to protect against diseases (such as measles, mumps, polio and whooping cough).
- To prevent lead poisoning, keep the baby away from areas contaminated by gasoline, auto fumes, lead-based paint, or other sources of lead.
- After meals, gently wipe out the baby's mouth and massage the gums with a soft damp cloth. As soon as the baby's teeth appear, clean them with a soft damp cloth or small, soft toothbrush. (Do NOT use toothpaste until the child is able to spit it out.)

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Infant Health Care & Safety (continued)

Recommendations for Infant Health Care & Safety (continued)

Safety:

- Always check the temperature of food before feeding to prevent burning the baby's mouth.
- Do NOT feed the infant food that needs to be refrigerated that has been out for 2 hours or more.
- After a feeding, throw out leftover breast milk or formula.
- Do NOT warm baby bottles in a microwave.
- Do NOT feed foods that can cause choking (such as foods that are hard, sticky, contain bones, or may swell in the throat).
- Do NOT feed honey or foods containing honey. (Honey may contain spores that cause botulism.)
- Buckle the baby into a properly installed infant car seat every time the baby rides in a car.
- Keep hazardous items (such as medicines, household cleaners, cords from window blinds, and sharp items) out of the baby's reach.
- To prevent drowning, NEVER leave an older infant near water (including open toilet bowls, buckets of water, and swimming pools).
- Cover electrical outlets with appropriate covers.
- Do NOT:
 - hang anything around the baby's neck (such as pacifier holders)
 - allow the baby to play with ropes, dog leashes, and/or other strangulation hazards.
- Call the Poison Control Center or 9-1-1, if the infant takes in a poisonous substance or has a life-threatening accident/emergency.

Indicators of Nutritional Need

Charts of Indicators of Nutritional Need

The 4 charts on the next pages list and describe the anthropometric, biochemical, clinical, and dietary indicators of nutritional need that make infants eligible for WIC, with their corresponding ISIS codes and levels of nutrition intervention.

Learning Activity 3, 4, or 5

To learn more about how to provide nutrition education to a parent/caregiver of an infant you may want to try **Learning Activity 3**, **Learning Activity 4**, or **Learning Activity 5** found at the end of this module.

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Indicators of Nutritional Need (continued)

Anthropometric Indicators

Indicator	Description	ISIS Code	Level
Very Underweight	Less than 5 th percentile weight for length/ height (based on CDC growth charts)	A10	4
Underweight	5 th – 10 th percentile weight for length/ height (based on CDC growth charts)	A11	2
Overweight	90 th – 98 th percentile weight for length/ height (based on CDC growth charts)	A21	1
Very Overweight	Greater than 98 th percentile weight for length/height (based on CDC growth charts)	A22	2
Low Head Circumference	Less than 5 th percentile (based on CDC growth charts)	A25	4
Short Stature	Less than or equal 10 th percentile height for age (based on CDC growth charts)	A31	1
Low Birth Weight	Less than or equal to 5 pounds 8 ounces (or 2,500 grams)	A50	3
Preterm Birth	Less than or equal to 37 weeks gestation	A51	3
Inadequate Growth	Inadequate growth from birth to 6 months of age	A61	4
Inadequate Growth	Inadequate growth in infants 6 months or older	A62	3

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Indicators of Nutritional Need (continued)

Anthropometric Indicators (continued)

Indicator	Description	ISIS Code	Level
Large for Gestational Age (LGA)	<ul style="list-style-type: none">Greater than or equal to 90th percentile weight for gestational age (based on intrauterine growth reference) ORBirth weight greater than or equal to 9 pounds (4,000 grams)	A91	1
Small for Gestational Age (SGA)	Less than 10 th percentile weight for gestational age (based on intrauterine growth reference)	A92	3

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Indicators of Nutritional Need (continued)

Biochemical Indicators

Indicator	Description	ISIS Code	Level
Low Hemoglobin/ Hematocrit	<ul style="list-style-type: none"> Hemoglobin level (Hgb) from 10-10.9 OR Hematocrit level (Hct) from 30-32.9 	B12	2
Very Low Hemoglobin/ Hematocrit	<ul style="list-style-type: none"> Hemoglobin level (Hgb) less than 10 OR Hematocrit level (Hct) less than 30 	B13	3
Other Congenital Blood Disorders	<ul style="list-style-type: none"> Hereditary conditions that cause physical or metabolic abnormality Condition must alter nutritional status metabolically and/or mechanically Examples include Sickle Cell Anemia and Thalassemia Major 	B90	4
Lead Poisoning	Blood lead level greater than or equal to 10 mcg/dl within past 12 months	B92	4

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Indicators of Nutritional Need (continued)

Clinical Indicators

Indicator	Description	ISIS Code	Level
Recent Major Surgery or Trauma	Recent surgery or trauma severe enough to affect nutritional status: <ul style="list-style-type: none"> • within past 2 months self-reported OR <ul style="list-style-type: none"> • greater than 2 months if there is continued need for nutritional support diagnosed by a physician. 	C51	3
Active TB	Tuberculosis within the past 6 months	C52	4
Severe Acute Infections	Severe acute infections within past 6 months that affect nutritional status, such as encephalitis, hepatitis, pneumonia, meningitis, and parasites.	C53	3
Recent Burns	Recent burns that affect nutritional status.	C54	3
Severe Dental Problems	Dental problems that impair the ability to ingest adequate quantity or quality of foods such as: <ul style="list-style-type: none"> • nursing or baby bottle caries OR <ul style="list-style-type: none"> • tooth loss. 	C57	2

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	ISIS Code	Level
Drug Exposure In Utero	Infant that has: <ul style="list-style-type: none"> • Fetal Alcohol Syndrome • positive toxicology screen • drug withdrawal • documentation or self report by mother of alcohol or drug use during most recent pregnancy. 	C60	3
CNS Disorders	Central Nervous System Disorders that affect energy requirements and ability to feed self such as: <ul style="list-style-type: none"> • Epilepsy • Cerebral Palsy • neural tube defects such as Spina Bifida 	C70	4
Down's Syndrome	Down's Syndrome where condition alters nutritional status metabolically and/or mechanically	C71	4
Developmental, Sensory, or Motor Delays	Developmental, sensory, or motor delays that interfere with the ability to eat, chew or swallow food. May include: <ul style="list-style-type: none"> • mental retardation • birth injury • head trauma • minimal brain function • feeding problems due to developmental delays • brain damage 	C72	4

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	ISIS Code	Level
Cystic Fibrosis	Cystic fibrosis where condition or treatment affects nutritional status	C73	4
Congenital Heart Disease	Congenital heart disease where condition or treatment affects nutritional status	C74	4
Congenital GI Disorders	Congenital gastrointestinal disorders that interfere with intake or absorption of nutrients and affects nutritional status such as: <ul style="list-style-type: none"> • Tracheal-Esophageal Fistula • Esophageal Atresia • Gastroschisis • Intestinal Atresia • Short Bowel Syndrome 	C75	4
Congenital Facial Malformation	Congenital facial malformation that causes physical abnormality that affects nutritional status such as cleft lip or cleft palate.	C76	4
Other Genetic & Congenital Disorders	Other genetic and congenital disorders that cause physical or metabolic abnormality and affect nutritional status such as: <ul style="list-style-type: none"> • Down's Syndrome • Muscular Dystrophy 	C77	4

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	ISIS Code	Level
Gastrointestinal Disorders	Gastrointestinal disorders where condition or treatment affects nutritional status such as: <ul style="list-style-type: none"> • Stomach or Intestinal Disorders • Small Bowel Enterocolitis • Malabsorption Syndrome • Liver Disease • Gall Bladder Disease 	C80	4
Cardiovascular Diseases	Cardiovascular diseases where condition or treatment affects nutritional status	C81	4
Immune-Deficiency or Chronic Infections	Immune deficiency or chronic infections that affect nutritional status such as: <ul style="list-style-type: none"> • Hepatitis • Human Immunodeficiency Virus (HIV) infection • Acquired Immune Deficiency Syndrome (AIDS) 	C82	4
Cancer	Cancer where condition or treatment affects nutritional status	C83	4
Hypertension	High blood pressure	C84	4
Diabetes Mellitus	Diabetes mellitus Type 1 or 2.	C85	4

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	ISIS Code	Level
Renal Disease	Kidney disease such as pyleonephritis or persistent proteinuria	C86	4
Inborn Errors of Metabolism	Gene mutations or gene deletions that alter metabolism in the body such as: <ul style="list-style-type: none"> • Phenylketonuria (PKU) • Maple Syrup Urine Disease • Galactosemia • Homocystinuria • Tyrosinemia • Histidinemia • Urea Cycle Disorders • Glutaric Aciduria • Methylmalonic Acidemia, • Glycogen Storage Disease • Galactokinase Deficiency • Fructoaldolase Deficiency • Propionic Acidemia • Hypermethionemia 	C87	4
Food Allergies	Has adverse immune response or hypersensitivity to a food that causes immunologic reaction	C89	4
Developmentally Delayed Mother	Infant born to woman with mental retardation or developmental delay	C90	3

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	ISIS Code	Level
Homeless	Infant lacks a fixed, regular nighttime residence; or residence is in a shelter, institution for temporary residence, residence of another individual used for temporary accommodation, or a place not designed or usually used for accommodating people.	C91	2
Abused/ Neglected	Within the past 6 months, has been at imminent risk of serious harm, death, serious physical or emotional harm or exploitation.	C93	2
Migrant	Member of a family where within the past 24 months, at least 1 individual has worked in agriculture on a seasonal basis and has a temporary home for this work.	C98	1
Entering Foster Care	Within past 6 months, infant: <ul style="list-style-type: none"> entered foster care OR moved from one foster care home to another 	C99	2

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	ISIS Code	Level
Nutrient Deficiency Diseases	Diagnosis of a nutritional deficiency or disease caused by insufficient dietary intake of nutrients such as: <ul style="list-style-type: none"> • Protein Energy Malnutrition (PEM) • Scurvy • Rickets • Beri Beri • Hypocalcemia • Osteomalacia • Vitamin K Deficiency • Pellagra • Cheilosis • Menkes Disease • Xerophthalmia 	C100	4
Pyloric Stenosis	Gastrointestinal obstruction with abnormal gastrointestinal function affecting nutritional status	C101	4
Thyroid Disorders	Hypothyroid or hyperthyroid conditions	C102	4
Hypoglycemia	Low blood sugar level	C104	4
Drug Nutrient Interactions	Use of drugs or medications that interfere with nutrient intake or utilization such that nutritional status is affected	C107	4

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	ISIS Code	Level
Inadequate Vitamin/Mineral Supplementation	Infant not routinely taking recommended dietary supplementation	C108	2
Inappropriate/ Excessive Intake of Supplements	Inappropriate or excessive intake of unprescribed vitamins, minerals, and/or herbal remedies	C109	3
Failure to Thrive	Infant not thriving	C110	4
Lactose Intolerance	Infant has insufficient production of the enzyme lactase causing inability to digest lactose.	C111	2
Primary Caregiver Has Limited Ability to Make Feeding Decisions &/or Prepare Food	<p>Infant's primary caregiver has limited ability to make feeding decisions and/or prepare food. Includes the following individuals:</p> <ul style="list-style-type: none"> • 17 years old and younger • mentally disabled/delayed • clinically depressed • physically disabled to a degree that restricts or limits food preparation abilities • people currently abusing or having history of alcohol/drug abuse 	C121	3

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	ISIS Code	Level
Persistent Asthma	Persistent asthma requiring daily medications and severe enough to affect nutritional status	C122	3
Other Medical Diseases or Conditions	Medical diseases or conditions severe enough to affect nutritional status such as: <ul style="list-style-type: none"> • juvenile rheumatoid arthritis and • lupus erythematosus 	C123	4
Infant with Suck Problems	Breastfed infant with suck problems such as ineffective or weak suck	C201	4
Jaundice while Breastfeeding	Infant that is jaundiced while breastfeeding	C204	4
Difficulty Latching On	Infant with difficulty latching onto mother's breast	C209	2
Infrequently Breastfed	Infrequent breastfeeding as sole source of nutrients for exclusively breastfed infants that are not on solids <ul style="list-style-type: none"> • < 8 feedings/24 hours if 2 months or younger OR • < 6 feedings/24 hours if 2 months or older 	C210	2

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Indicators of Nutritional Need (continued)

Dietary Indicators

Indicator	Description	ISIS Code	Level
Inappropriate Feeding Practices	Routinely: <ul style="list-style-type: none"> • feeding goat, sheep, imitation or substitute milk • not using a spoon for early solid foods • feeding solids in a bottle • using a syringe-action nipple feeder • feeding foods that put the infant at risk for choking • putting the infant on inappropriate, infrequent or highly restrictive feeding schedules • forcing infant to eat certain types or amounts of food • giving honey to the infant 	D95	2
Inappropriate Use of Baby Bottles	Inappropriate use of baby bottles such as using bottles for liquids other than breast milk, formula or water, or adding cereal or other solids to bottles.	D96	2
Early Introduction to Solids	Introducing solids into the infant's diet BEFORE 4 months of age.	D97	2
Delay Solids	Failure to introduce solids into infant's diet by 7 months of age	D98	2

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Indicators of Nutritional Need (continued)

Dietary Indicators (continued)

Indicator	Description	ISIS Code	Level
Vegan or Highly Restrictive Diets	Consuming a diet of plant origin foods only or a diet low in calories or severely limiting intake of nutrients.	D100	4
Inadequate Formula or Breast Milk	Infant routinely NOT fed infant formula or breast milk as a primary source of nutrients during first 6 months.	D101	3
No Routine Age-Appropriate Source of Iron	No routine age-appropriate source of iron after 4-6 months of age	D102	1
Improper Dilution of Formula	Routine over- or under-dilution of formula.	D103	2
Feeding Other Foods Low in Essential Nutrients	Routinely eating foods low in essential nutrients and high in calories.	D104	1
Lack Of Sanitation In Preparing & Handling Of Bottles	Lack of sanitation in preparing and handling of nursing bottles due to: <ul style="list-style-type: none"> • lack of knowledge, • failure to practice proper techniques • no access to safe water supply, equipment, or facilities for cleaning. 	D105	1

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Indicators of Nutritional Need (continued)**Dietary Indicators (continued)**

Indicator	Description	ISIS Code	Level
Feeding Cow's Milk as Primary Source of Milk	Feeding infant cow's milk as primary source of milk.	D107	2

Indicators of Nutritional Need (continued)

Other Indicators

Indicator	Description	ISIS Code	Level
Transfer	Transfer	N20	1
Breastfeeding Infant of Mother at Risk	Breastfeeding infant of woman at nutritional risk	N32	1
Born to WIC Mother	Infant (less than 6 months old) born to woman on WIC during her pregnancy	N40	1
Born to WIC Eligible Mother	Infant (less than 6 months old) born to woman who was WIC eligible during her pregnancy	N41	1

Summary

Growth & Development

An infant's growth and development are affected by:

- genetics,
 - environment,
 - behavior, and
 - disease.
-

Feeding Skills

The ages for some key feeding skills are listed below.

Age (months)	Feeding Skill
0-4	Sucks and swallows liquids
4-6	Begins to eat solid foods
6	Begins to use a cup
8-12	Feeds self

Reflexes

Early feeding skills are greatly affected by 5 reflexes that affect movement of the infant's mouth. These are:

- rooting reflex,
 - tongue thrust reflex,
 - suck-swallow pattern,
 - gag reflex, and
 - bite reflex.
-

Infant Feeding Problems

Common infant feeding problems include:

- allergies,
 - baby bottle tooth decay,
 - choking,
 - colic,
 - constipation,
 - diarrhea,
 - overfeeding,
 - poor intake, and
 - spitting up.
-

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Summary (continued)

Breast Is Best!

A baby should be breastfed whenever possible.

Formula

When breastfeeding is not possible, the parent/caregiver should give the infant a commercially prepared iron-fortified infant formula.

There are 3 types of infant formula. These are:

- milk-based,
- soy-based, and
- special therapeutic.

Infant formula should always be prepared correctly and stored safely.

Infant Health Care & Safety

Some key recommendations for infant safety and health care are:

- Breastfeed whenever possible.
 - Put baby on back for naps and bedtime.
 - Immunize as recommended.
 - Keep all dangerous items out of infant's reach.
 - Clean baby's gums/teeth regularly.
-

Indicators of Nutritional Need

There are many indicators of nutritional need that make an infant eligible for WIC. These include anthropometric, biochemical, clinical, and dietary indicators.

Glossary

anthropometric indicator- An anthropometric indicator is information about a person's body measurements such as height, weight, and circumference of the head, waist, arms or legs.

biochemical indicator- A biochemical indicator is information about a person's blood or urine such as hemoglobin (Hgb), hematocrit (Hct), blood sugar, and blood lead levels.

bite reflex- The bite reflex is the up-and-down biting movement that occurs when the infant's gums are touched.

botulism- Infant botulism is an infectious disease that occurs when an infant eats the spores of the bacteria *Clostridium botulinum* (such as the spores sometimes found in honey). Symptoms can include constipation, weakness, and in severe cases, paralysis and problems breathing.

case study- A case study is a description of a person or situation that is studied to decide on the best plan of action.

clinical indicator- A clinical indicator is information about a person's health history and present medical and living conditions.

development- Development is the process of learning new skills or maturing.

dietary indicator- A dietary indicator is information about a person's eating behaviors.

gag reflex- The gag reflex is the movement that occurs when the back half of the tongue or back of the roof of the mouth are touched.

genetics- Genetics is a person's inherited characteristics, such as eye/hair color, body build, and height.

growth- Growth is the increase in the physical size of the body.

hypothyroidism- Hypothyroidism is a condition in which a person's metabolic rate is below normal.

immunize- To immunize or vaccinate is to give a person a shot or pill to prevent infection from certain bacteria or viruses.

Glossary (continued)

infant formula- Infant formula is a specially made mixture of nutrients, usually in a powder or liquid form, given to infants when breastfeeding is not possible.

reflex- A reflex is an automatic response, usually a movement that occurs when a part of the body is touched or stimulated.

role play- A role play is when 2 or more people act out a scene as though it was “real life”. “Props” such as baby dolls or food models are not needed but may be helpful.

rooting reflex – The rooting reflex is the movement that occurs when the infant is touched on the side of the mouth or cheek. The infant moves her/his head in the direction of the touch and opens her/his mouth.

short stature- Short stature is height or length for age that is below the 10th percentile on the growth chart.

suck-swallow pattern- The suck-swallow pattern is the movement by an infant that occurs when the tongue and lower lip are touched.

Sudden Infant Death Syndrome (SIDS)- Sudden Infant Death Syndrome, sometimes called “crib death”, is the unexpected, sudden death of an infant in which an autopsy does not show an explainable cause of death.

tongue thrust reflex- The tongue thrust reflex is the movement in which the tongue pushes forward when the lips are touched.

weaning from the bottle- Weaning from the bottle is the process of reducing and finally discontinuing bottle feeding by replacing bottle feeding of formula or milk with a cup and other types of eating and sources of food.

Progress Check

1. Name at least 3 factors that affect growth and development in an infant.

2. Match the ages to the stage of feeding.

<u>Stage</u>	<u>Age (months)</u>
_____ Begins to use a cup	A 4 - 6
_____ Nurses only from breast or bottle (no solid foods)	B 6 - 7
_____ Weans off of bottle	C 12 -18
_____ Begins to eat solid foods	D Birth - 4
_____ Begins to use a spoon	E 10 - 12

3. Mark the following infant feeding practices as “A” for appropriate or “I” for inappropriate.

- _____ giving a bottle of diluted juice at bedtime
- _____ giving solids at 3 months of age
- _____ giving juice in a cup
- _____ giving only breast milk or iron fortified formula for the first 4 months
- _____ giving goat’s milk during the first year

Progress Check (continued)

4. Match the infant feeding problem with a possible solution.

<u>Problem</u>	<u>Solution</u>
_____ Allergies	A Do NOT put baby to bed with a bottle.
_____ Choking	B Introduce 1 food at a time in small amounts.
_____ Constipation	C Stop feeding when baby appears full.
_____ Baby bottle tooth decay	D Do not give hard foods or foods such as uncut grapes.
_____ Spitting Up	E Offer diluted prune juice.

5. Mark the following as “TRUE” or “FALSE”.

- _____ When preparing powdered formula you do not need to measure out the amount of water.
- _____ Soy-based formula is made from soy protein.
- _____ Prepared formula should be used within 48 hours.
- _____ After the infant has been fed, formula remaining in the bottle can be saved for 3 days, if refrigerated.
- _____ The amount of formula a newborn infant will take will vary with each baby.
- _____ As the baby grows older, the amount of formula taken per feeding will increase and the number of feedings will decrease.

Progress Check (continued)

6. List 5 recommendations for an infant's health care and safety.

7. Identify the following indicators of nutritional need as "A" for anthropometric, "B" for biochemical, "C" for clinical, and "D" for dietary.

- _____ very underweight
- _____ very low hemoglobin/hematocrit
- _____ diabetes mellitus
- _____ Down's Syndrome
- _____ preterm birth
- _____ lead poisoning
- _____ early introduction to solid foods
- _____ difficulty latching on
- _____ inappropriate feeding practices
- _____ born to WIC mother

Learning Activities

The following activities are included and are recommended for interactive learning:

- Learning Activity 1: Stages of Infancy
- Learning Activity 2: Discussion of Infant Nutrition Issues
- Learning Activity 3: Observations
- Learning Activity 4: Case Studies
- Learning Activity 5: Role Plays

Activity 1: Stages of Infancy

Learning Objectives After completing this activity, the Nutrition Assistant will be able to:

- describe the normal growth and development stages of an infant.

Instructions

1. Make arrangements with your supervisor or mentor to observe several infants in the waiting room area of your WIC site.
2. Observe these infants.
3. Fill in the chart on the next page. Use your observations and pages 3-4 of this module to guide you. Make sure to write down such things as when the infant begins to:
 - sit up without support,
 - use a cup,
 - eat solid foods,
 - handle finger foods, and
 - use a spoon.
4. When you are finished, discuss your findings with your supervisor.
5. To assist you with your learning, you may also want to:
 - view a video such as *The Infant* or *The Older Baby* by Ellen Satter,
 - review the books *Child of Mine* or *How to Get Your Kid to Eat...But Not Too Much*, by Ellen Satter, and/or
 - look over any pamphlets on infants that your local agency has available.

Activity 1: Stages of Infancy

Age	Description
1 month	
2 months	
3 months	
4 months	
5 months	
6-9 months	
9-12 months	

Activity 2: Discussion of Infant Nutrition Issues

Learning Objectives After completing this activity, the Nutrition Assistant will:

- be familiar with some of the infant nutrition issues in WIC.

Instructions

1. Have your supervisor or mentor arrange for you to spend about 1 hour with a WIC staff person.
2. Ask the staff person to discuss her/his experiences with **infant** nutrition issues at WIC.
3. Ask such questions as:
 - *What **infant** nutrition problems seem to be most common among the participants you see?*
 - *What are some common indicators of nutritional need for **infants**?*
 - *What are some difficulties you have had in assessing an **infant's** nutritional status?*
 - *What suggestions do you have that would help a new staff person be ready to address the needs of **infants**?*
4. Write down your notes on the next page.
5. When you are finished, discuss your findings with your supervisor.

Activity 2: Discussion of Infant Nutrition Issues

Notes:

What **infant** nutrition problems seem to be most common among the participants you see?

What are some common indicators of nutritional need for **infants**?

What are some difficulties you have had in assessing an **infant's** nutritional status?

What suggestions do you have that would help a new staff person be ready to address the needs of **infants**?

Activity 3: Observations

Learning Objectives

After completing this activity, the Nutrition Assistant will be able to explain how to:

- interview the parent/caregiver of an infant,
- assess an infant's nutritional status,
- prioritize needs, and
- provide individual education.

Instructions

1. Have your mentor or supervisor arrange for you to observe several individual nutrition education sessions with the parent/caregiver of an infant, such as an **infant enrollment assessment** or **infant mid-certification assessment**.

2. Observe the staff person as s/he:
 - assesses the infant's needs/problems,
 - prioritizes these needs/problems, and
 - provides individual education.

(Make sure to observe how participants needing different levels of intervention (Levels 1-4) are handled in your agency.)

3. Write down your notes on the next page.
 4. Discuss your observations with your mentor or supervisor.
-

Activity 3: Observations

Notes:

How were the infant's needs/problems assessed?

How were the infant's needs/problems prioritized?

How are Level 3 and 4 infants handled by your agency?

Activity 4: Case Studies

- Learning Objectives** After completing this activity, the Nutrition Assistant will be able to:
- assess an infant's anthropometric, biochemical, clinical, and dietary status.

- Instructions**
1. Read each of the 5 case studies on the following pages.
 2. Identify the infant's anthropometric, biochemical, clinical, and dietary status. (You may use an ISIS terminal if available.)
 3. Fill out the form following each case study.
 4. Talk to your supervisor or mentor if you need help.
 5. When you are finished, discuss your responses with your supervisor or mentor.

Activity 4: Case Studies

Case Study 1:

Ryan is 8 months old. The following information is available about him:

- He was 8 pounds at birth.
- He is now 25 inches long.
- He now weighs 16 pounds.
- His hemoglobin is 10.6 g/dl.
- He is on iron-fortified formula and has not been offered any other foods.
- He has some tooth decay.

Assessment:

What are his **anthropometric** risks?

What are his **biochemical** risks?

What are his **clinical** risks?

What are his **dietary** risks?

Activity 4: Case Studies

Case Study 2:

Chelsea is 6 months old. The following information is available about her:

- She was 5 pounds at birth.
- She is now 24 inches long.
- She now weighs 12 pounds, 8 ounces.
- Her hemoglobin is 12 g/dl.
- Her mother is breastfeeding her. (Her mother says she nurses about 3 to 4 times in 24 hours.)
- Her mother is also giving her some cow's milk in a bottle.

Assessment:

What are her **anthropometric** risks?

What are her **biochemical** risks?

What are her **clinical** risks?

What are her **dietary** risks?

Activity 4: Case Studies

Case Study 3:

Alexandra is 5 weeks old. The following information is available about her:

- She was 4 pounds, 6 ounces at birth.
- She is now 22 inches long.
- She now weighs 4 pounds, 12 ounces.
- Her hemoglobin is 12 g/dl.
- Her mother is breastfeeding exclusively.

Assessment:

What are her **anthropometric** risks?

What are her **biochemical** risks?

What are her **clinical** risks?

What are her **dietary** risks?

Activity 4: Case Studies

Case Study 4:

Jesus is 11 months old. The following information is available about him:

- He was 8 pounds, 1 ounce at birth.
- He now is 25 inches long.
- He now weighs 21 pounds.
- His hemoglobin is 13.2 g/dl.
- He has been eating solid foods since he turned 5 months.
- His mother says she gives him a bottle filled with a juice drink 2 or 3 times each day.

Assessment:

What are his **anthropometric** risks?

What are his **biochemical** risks?

What are his **clinical** risks?

What are his **dietary** risks?

Activity 4: Case Studies

Case Study 5:

Vladislav is 4 months old. The following information is available about him:

- He was 7 pounds, 3 ounces at birth.
- He now is 26 inches long.
- He now weighs 15 pounds.
- His hemoglobin is 9.8 g/dl.
- He is being fed formula. (It is not clear if he regularly gets iron-fortified formula.)
- He has not yet started on solid foods.

Assessment:

What are his **anthropometric** risks?

What are his **biochemical** risks?

What are his **clinical** risks?

What are his **dietary** risks?

Activity 5: Role Plays

Learning Objectives After completing this activity the Nutrition Assistant will be able to:

- interview the parent/caregiver of an infant,
- assess an infant's nutritional status,
- prioritize the infant's needs, and
- provide individual education to the parent/caregiver of an infant.

Background A role play is a scenario in which 2 or more people act out a scene as though it was “real life”. Props are not needed but may be helpful.

Instructions

1. Ask your mentor, supervisor, or a co-worker to role play any 3 of the 5 roles (A-E) described on the following page.
2. Using the information you have learned about infant nutrition, act out the role of a WIC Nutrition Assistant in a session with these 3 parents/caregivers.
3. Mentor/Supervisor/Co-Worker: Using the role plays as your guide, act out the role of the participant. Try to be as realistic as possible.
4. After each session, ask your co-worker to tell you what s/he noticed. Make sure to ask for your strengths as well as weaknesses.

Activity 5: Role Plays

5 Participants

-
- | | |
|------------------------|--|
| Role Play
A | Donna Swift's daughter Taneisha is 6 months old. She weighs 13 pounds and is 26.5 inches long. She has a hemoglobin of 11 g/dl and a hematocrit of 34%. She is being breastfed and has just started eating some solid foods. |
|------------------------|--|
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| Role Play
B | Grace Chu's son David is 9 months old. David's weight is at the 8 th percentile for length. He has a hemoglobin of 10.8 g/dl and a hematocrit of 34%. He is on iron-fortified formula only. He has not been offered any solid foods yet. |
|------------------------|---|
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- | | |
|------------------------|--|
| Role Play
C | Sabrina Garcia's daughter Selena is 5 weeks old. Sabrina's weight is at the 45 th percentile for length. She is on low-iron infant formula. |
|------------------------|--|
-
- | | |
|------------------------|--|
| Role Play
D | Roberta Juarez's son Jaime is 2 months old. Jaime's weight is at the 50 th percentile for length. He has a hemoglobin of 10.8 g/dl. Jaime is on iron-fortified formula. Sometimes he has problems sucking from a bottle. Roberta says he also has problems sleeping through the night and she is thinking about putting cereal in his nighttime bottle. |
|------------------------|--|
-
- | | |
|------------------------|--|
| Role Play
E | Tina William's and her daughter Jasmyn live in a shelter for homeless families. Jasmyn is 9 months old. Her weight is at the 5 th percentile for length. She has a hemoglobin of 12.6 g/dl. She is on iron-fortified formula. She does not yet drink from a cup. She does eat some solid foods. |
|------------------------|--|
-

Progress Check Answers

1. Name at least 3 factors that affect growth and development in an infant.

Any 3 of the following responses are correct:

- **genetics,**
- **environment,**
- **behavior, and**
- **disease.**

2. Match the ages to the stage of feeding.

<u>Stage</u>	<u>Age (months)</u>
<u>B</u> Begins to use a cup	A 4 - 6
<u>D</u> Nurses only from breast or bottle (no solid foods)	B 6 - 7
<u>C</u> Weans off of bottle	C 12 - 18
<u>A</u> Begins to eat solid foods	D Birth - 4
<u>E</u> Begins to use a spoon	E 10 - 12

3. Mark the following infant feeding practices as “A” for appropriate or “I” for inappropriate.

- I** giving a bottle of diluted juice at bedtime
- I** giving solids at 3 months of age
- A** giving juice in a cup
- A** giving only breast milk or iron fortified formula for the first 4 months
- I** giving goat’s milk during the first year

Progress Check Answers (continued)

4. Match the infant feeding problem with a possible solution.

<u>Problem</u>	<u>Solution</u>
<u>B</u> Allergies	A Do NOT put baby to bed with a bottle.
<u>D</u> Choking	B Introduce 1 food at a time in small amounts.
<u>E</u> Constipation	C Stop feeding when baby appears full.
<u>A</u> Baby bottle tooth decay	D Do not give hard foods or foods such as uncut grapes.
<u>C</u> Spitting Up	E Offer diluted prune juice.

5. Mark the following as “TRUE” or “FALSE”.

- FALSE** When preparing powdered formula you do not need to measure out the amount of water.
- TRUE** Soy-based formula is made from soy protein.
- TRUE** Prepared formula should be used within 48 hours.
- FALSE** After the infant has been fed, formula remaining in the bottle can be saved for 3 days, if refrigerated.
- TRUE** The amount of formula a newborn infant will take will vary with each baby.
- TRUE** As the baby grows older, the amount of formula taken per feeding will increase and the number of feedings will decrease.

Progress Check Answers (continued)

6. List at least 5 recommendations for an infant's health care and safety.

Any 5 of the following responses are correct:

- ***Wash hands with hot water and soap before preparing stored breast milk or formula.***
- ***Sterilize bottles by washing them in an automatic dishwasher or boiling water.***
- ***Store clean bottles upside down or covered in a clean place.***
- ***Breastfeed the baby whenever possible.***
- ***Feed non-breastfed baby commercially prepared iron-fortified formula.***
- ***To help prevent Sudden Infant Death Syndrome (SIDS), put the baby on her/his back when putting her/him to bed or a nap.***
- ***Give solid foods only when the baby is ready (usually at 4-6 months).***
- ***Begin teaching the baby how to use a cup at 6-7 months.***
- ***Immunize the baby to protect against diseases (such as measles, mumps, polio and whooping cough).***
- ***To prevent lead poisoning, keep the baby away from areas contaminated by gasoline, auto fumes, lead-based paint, or other sources of lead.***
- ***After meals, gently wipe out the baby's mouth and massage the gums with a soft damp cloth. (As soon as the baby's teeth appear, clean them with a soft damp cloth or small, soft toothbrush.)***
- ***Always check the temperature of food before feeding to prevent burning the baby's mouth.***
- ***Do NOT feed the infant food that needs to be refrigerated that has been out for 2 hours or more.***

Progress Check Answers (continued)

6. (continued)

(List at least 5 recommendations for an infant's health care and safety.)

- ***After a feeding, throw out leftover breast milk or formula.***
- ***Do NOT warm baby bottles in a microwave. (Microwaves often do not heat evenly. Babies' mouths and throats have been burned by "hot spots" inside a bottle when the outside of the bottle has felt cool.)***
- ***Do NOT feed foods that can cause choking (such as foods that are hard, sticky, contain bones, or may swell in the throat).***
- ***Do NOT feed honey or foods containing honey.***
- ***Buckle the baby into a properly installed infant car seat every time the baby rides in a car.***
- ***Keep hazardous items (such as medicines, household cleaners, cords from window blinds, and sharp items) out of the baby's reach.***
- ***To prevent drowning, NEVER leave an older infant near water (including open toilet bowls, buckets of water, and swimming pools).***
- ***Cover electrical outlets with appropriate covers.***
- ***Do NOT:***
 - ***hang anything around the baby's neck (such as a string that holds a pacifier)***
 - ***allow the baby to play with ropes, dog leashes, and/or other strangulation hazards.***
- ***Call the Poison Control Center or 9-1-1, if the infant takes in a poisonous substance or has a life-threatening accident/emergency.***

Progress Check Answers (continued)

7. Identify the following indicators of nutritional need as “A” for anthropometric, “B” for biochemical, “C” for clinical, and “D” for dietary.

- A** very underweight
- B** very low hemoglobin/hematocrit
- C** diabetes mellitus
- C** Down’s Syndrome
- A** preterm birth
- B** lead poisoning
- D** early introduction to solid foods
- C** difficulty latching on
- D** inappropriate feeding practices
- C** born to WIC mother